Statistical features of the Quiet Sun in EUV

A. Pauluhn et al.

HTA Bern and ETH Zürich, Switzerland

The frequency distribution of the extreme ultraviolet (EUV) intensities in the quiet Sun has in the past usually been modelled using two Gaussians. Here we test this and other distribution functions against observed distributions with exceptional statistics. The data were obtained in a number of spectral lines observed with two extreme ultraviolet spectrometers, CDS (Coronal Diagnostic Spectrometer) and SUMER (Solar Ultraviolet Measurements of Emitted Radiation) on board the Solar and Heliospheric Observatory (SOHO). We show that the frequency distribution of the radiance is best modelled by a lognormal distribution or by a sum of a lognormal and a Gaussian. The fact that the radiance distribution of the quiet Sun including the network and the intranetwork is better reproduced by a single lognormal distribution function than by two Gaussians suggests that the same heating processes are acting in both types of features. The shape of the distribution function shows a clear temperature dependence.